International Poster Journal IPJ of Dentistry and Oral Medicine

Int Poster J Dent Oral Med 2012, Vol 14 No 3, Poster 616

FOUR-YEARS EVALUATION OF DIFFERENT RETENTION SYSTEMS FOR IMPLANT-SUPPORTED OVERDENTURES

Language: English

Authors:
Dr. PhD Corina Marilena Cristache, Dr. Gheorghe Cristache, E.N.T. Specialist, Dr. Cosmin Marian Circu,
Concordia Dent Clinic, Bucharest, Romania
Dr. PhD Alexandru Andrei Iliescu, Lecturer, Assoc. Prof. Dr. PhD Mihai Burlibasa,
University of Medicine and Pharmacy "Carol Davila", Faculty of Dental Medicine, Bucharest, Romania

Date/Event/Venue:
13-15 October 2011
The 20th Annual Scientific Meeting of the European Association of Osseointegration (EAO)
Athens, Greece

EAO Travel Grant

Introduction

The multitude of benefits to the edentulous population from mandibular two implant over-dentures is well known, overwhelming in improved function, emotional stability, physical health, and esthetics (1).
There is no strong evidence supporting a single standard of care concerning type of retention system in the edentulous mandible due to the fact that functional demands of edentulous patients are highly variable and the choice of treatment is strongly influenced by adaptive capacity, socio-cultural background and also by financial means (2).

Objectives

The aim of our study is to compare, in a prospective controlled clinical trial, the Locator System with two other types of retention (Retentive Anchors and Magnets) for implant supported over-denture in atrophic edentulous mandible, with the use of Straumann Dental Implant System.

Material and Methods

The study was divided in two parts – in the first part of the study 46 fully mandibular edentulous patients were enrolled (age 42-84 years, mean-60,6). Each patient received 2 screw-type Straumann standard implants Ø4.1mm, SLA surface in the canine region of the mandible, placed in a 1-stage non-submerged procedure according to a strict protocol (3). After 6-weeks healing period implants were early loaded (4) and the patients were randomly assigned to one of two main groups: Group B-23 patients received Retentive Anchors Fig. 1) (and Group M-23 patients received Magnets (Fig. 2). The two groups of patients were compared in the second part of the study with 23-patients (age 49-80 years, mean-65) receiving Locator system abutments (Group-L) (Fig. 3) following same research protocol (ClinicalTrials.gov Identifier: NCT01034930). A new mandibular over-denture with metal reinforcement was made (Fig. 4, 5, 6).
Total costs (5) of the surgical, prosthetic and maintenance procedure were calculated for the three attachment systems used after 48 months. Patient satisfaction was assessed with the aid of questionnaires validated and cross-cultural adapted for Romanian language (ClinicalTrials.gov Identifier: NCT01392456) from the Allen and Locker's index OHIP-EDENT (6), initial (before surgery-with the original denture) and at 1 and 4-years follow-up. OHIP-EDENT (Oral Health Impact Profile in Edentulous Adults), the short form (19 items) derived from OHIP using an item impact method had good measurement properties, making it appropriate for use in the clinical settings and detects the impact of oral health in the quality of life (OHRQoL) of patients who wear total prosthesis. It includes questions addressing masticatory capacity, pleasure of eating, level of comfort and relationship problems.

Fig. 1a: Retentive Anchors abutments on implants

Fig. 1b: Retentive Anchor abutment

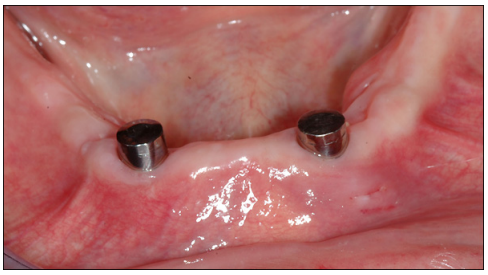


Fig. 2a: Magnets abutments on implants

Fig. 2b: Magnet abutment

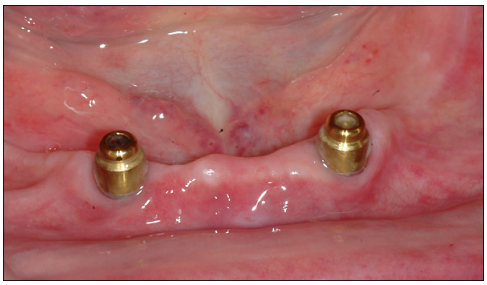


Fig. 3a: Locator abutments on implants

Fig. 3b: Locator abutment

Fig. 4: Patient before treatment

Fig. 5: Patient treated with implant over-denture retained by Locator system

Fig. 6: Mandibular over-denture with Locator male

Results

Four implants failed before loading were replaced and healed uneventfully (97,1% success rate after four years).
Surgical and prosthetic costs were similar, but components costs were highest at M group and lowest at B group (Fig. 7).
Patient satisfaction improved significantly in the three groups across all variables (Fig. 8, 9) including esthetics, except ease of cleaning – the B and L-group had higher maintenance necessities (Fig. 10). M-group scored lower stability but also lower maintenance requirements (Fig. 9, 10).

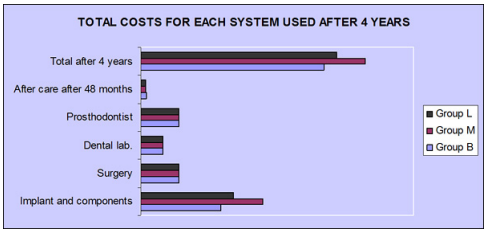


Fig. 7: Graphically expression of total costs after 48 months

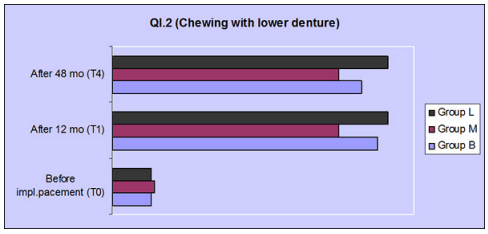


Fig. 8: Graphically expression for ease of chewing with the lower denture

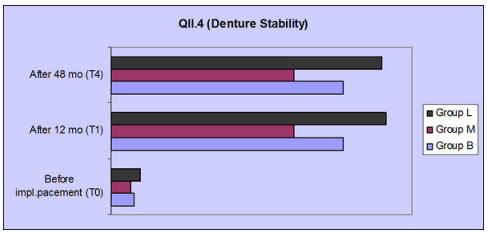


Fig. 9: Graphically expression of mandibular denture stability

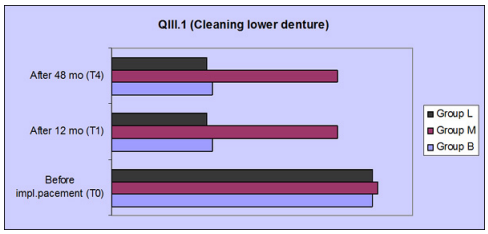


Fig. 10: Graphically expression for ease of denture cleaning

Conclusions

Implant-supported overdenture improves retention and stability, provides better esthetics, phonetics, bone preservation, increased comfort, better psychosocial state, and enhanced nutrition, all resulting in an improved quality of life.The choice of the retention system used is determined by the special requirements of each patient.
Implant-supported mandibular overdenture is a simple, predictable, and cost-effective treatment for edentulous patients.
Acknowledgment: Study supported by Grant 316/2003 and 507/207 from International Team for Implantology (ITI) Foundation for the Promotion of Oral Implantology, Switzerland.

Literature

1. Naert, I., Alsaadi, G., van Steenberghe, D., & Quirynen, M. A 10-year randomized controlled trial on the of splinted and unsplinted oral implants retaining mandibular overdentures: Peri-implant outcomes. International Journal of Oral and Maxillofacial Implants, 19, 2004,695-702.
2. Fitzpatrick B. Standard of care for the edentulous mandible: a systematic review.J Prosthet Dent. 2006 Jan;95(1):71-8.
3. Weingart D, ten Bruggenkate CM. Treatment of fully edentulous patients with ITI implants. Clin Oral Impl Res 2000: 11 (Suppl.): 69-82. C Munksgaard 2000.
4. Morton D. Consensus Statements and Recommended Clinical Pocedures Regarding Loading Protocols for Endosseous Dental Implants in ITI Treatment Guide vol 2 Loading Protocols in Implant Dentistry - Partially Dentate Patients - Morton D., Ganeles J, - Quintessence Publishing Co, Ltd. pg. 5-10.
5. Cristache C.M, Sfeatcu I.R, Burlibasa M., Cristache G. Implant supported mandibular overdenture - a literature review of costs, maintenance and patient satisfaction OHDMBSC - Vol. V - No. 3 -September, 2006.
6. Allen F, Locker D. A modified short version of the oral health impact profile for assessing health-related quality of life in edentulous adults. Int J Prosthodont. 2002; 15: 446-50.

This Poster was submitted by Dr. PhD Corina Marilena Cristache.

Correspondence address:
Dr. PhD Corina Marilena Cristache
Concordia Dent Clinic
257N, Soseaua Oltenitei
041335, Bucharest
Romania

Poster Faksimile:

233

FOUR-YEARS EVALUATION OF DIFFERENT RETENTION SYSTEMS FOR IMPLANT SUPPORTED OVERDENTURES

Corina Marilena Cristache(1), Alexandru Andrei Iliescu(2), Gheorghe Cristache(1)
Mihai Burlibasa(2) Cosmin Marian Carcu(1)
(1) CONCORDIA DENT CLINIC, BUCHAREST, Romania
(2) UNIVERSITY OF MEDICINE AND PHARMACY "CAROL DAVILA", BUCHAREST, Romania

Topic: Implant therapy outcomes, prosthetic aspects

Abstract

Over the past thirty years, clinicians have been restoring aesthetics and function in edentulous patients with implant-supported overdentures using different retention systems. The choice of prosthesis retention has significant economic implications but it is not well known if there are specific clinical implications, particularly with regard to treatment's success as well as patient satisfaction therefore is critically important to determine whether there are meaningful differences in outcomes, based on the type of retention used.

The purpose of this study was to evaluate subjects' satisfaction correlated with total costs during a four years randomised clinical trial of implant-retained mandibular complete dentures attached by Retentive Anchors (Balls - B), Magnets (M) or Locator® System (L) to Straumann endosteal dental implants.

The 69 patients enrolled in the study were followed every 6 month for 4 years and detailed records were kept of costs, extent of maintenance required after placement of the dentures, general satisfaction as well as comfort, stability, masticator efficiency, speech, aesthetic and cleaning ability.

All three groups had less oral health related quality of life problems than before treatment.

The Magnet group has the highest cost for the components but less maintenance requirements.The Ball and Locator groups scored higher rating on comfort, stability and ability to chew comparing to the Magnet group. Although the retention force of the Magnet attachment is smaller, patient satisfaction is high at all groups.

Background and Aim

Background

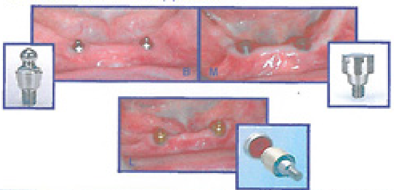
The multitude of benefits to the edentulous population from mandibular two implant overdentures is well known, overwhelming in improved function, emotional stability, physical health, and esthetics.

The aim of our study is to compare, in a prospective controlled clinical trial, the Locator® System with two other types of stress-breaking retention (Retentive Anchors and Magnets) for implant supported overdenture in atrophic edentulous mandible, with the use of Straumann Dental Implant System.

Methods and Materials

The study was divided in two parts – in the first part of the study 46 fully mandibular edentulous patients were enrolled (age 42-84 years, mean-60,6). Each patient received 2 screw-type Straumann standard implants Ø4.1mm, SLA surface in the canine region of the mandible, placed in a 1-stage non-submerged procedure according to a strict protocol. After 6-weeks healing period implants were **early loaded** and the patients were randomly assigned to one of two main groups: Group B-23 patients received Retentive Anchors and Group M-23 patients received Magnets. The two groups of patients were compared in the second part of the study with 23-patients (age 49-80 years, mean-65) receiving Locator system abutments (Group-L) following same research protocol (ClinicalTrials.gov Identifier: NCT01034930). A new mandibular overdenture with metal reinforcement was made.

Total costs of the surgical, prosthetic and maintenance procedure were calculated for the three attachment systems used after 48 months. Patient satisfaction was assessed with the aid of questionnaires validated in Romanian (ClinicalTrials.gov Identifier: NCT01392456) from the Allen and Locker's index OHIP-EDENT [3], initial (before surgery-with the original denture) and at 1 and 4-years follow-up. OHIP-EDENT (Oral Health Impact Profile in Edentulous Adults), the short form (19 items) derived from OHIP using an item impact method had good measurement properties, making it appropriate for use in the clinical settings and detects the impact of oral health in the quality of life (OHRQoL) of patients who wear total prosthesis. It includes questions addressing masticatory capacity, pleasure of eating, level of comfort and relationship problems.



Results

Four implants failed before loading were replaced and healed uneventfully (97.1% success rate after four years).

Surgical and prosthetic costs were similar, but components costs were highest at M group and lowest at B group.

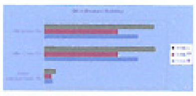
Patient satisfaction improved significantly in the three groups across all variables including esthetics, except ease of cleaning - the B and L-group had higher maintenance necessities. M-group scored lower stability but also lower maintenance requirements.

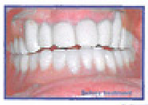
Conclusions

Implant-supported overdenture improves retention and stability, provides better esthetics, phonetics, bone preservation, increased comfort, better psychosocial state, and enhanced nutrition, all resulting in an improved quality of life.

The choice of the retention system used is determined by the special requirements of each patient.

Implant-supported mandibular overdenture is a simple, predictable, and cost-effective treatment for edentulous patients.





Acknowledgment: Study supported by Grant 316/2003 and 507/207 from ITI Foundation for the Promotion of Oral Implantology, Switzerland.

References

1. Naert, I., Alsaadi, G., van Steenberghe, D. & Quirynen, M. A [illegible] International Journal of Oral and Maxillofacial Implants. 19. 2004 [illegible]
2. Allen F, Locker D. A modified short version of the oral health impact profile [illegible] Int J Prosthodont 2002; 15: [illegible]
3. Cristache CM, Iliescu AA, Burlibasa M, Cristache G. Implant supported mandibular overdenture [illegible] - Vol [illegible] - No. 3 - September 2010

Presented at the 20th Annual Scientific Meeting of the European Association of Osseointegration
3-15 October 2011, Athens, Greece